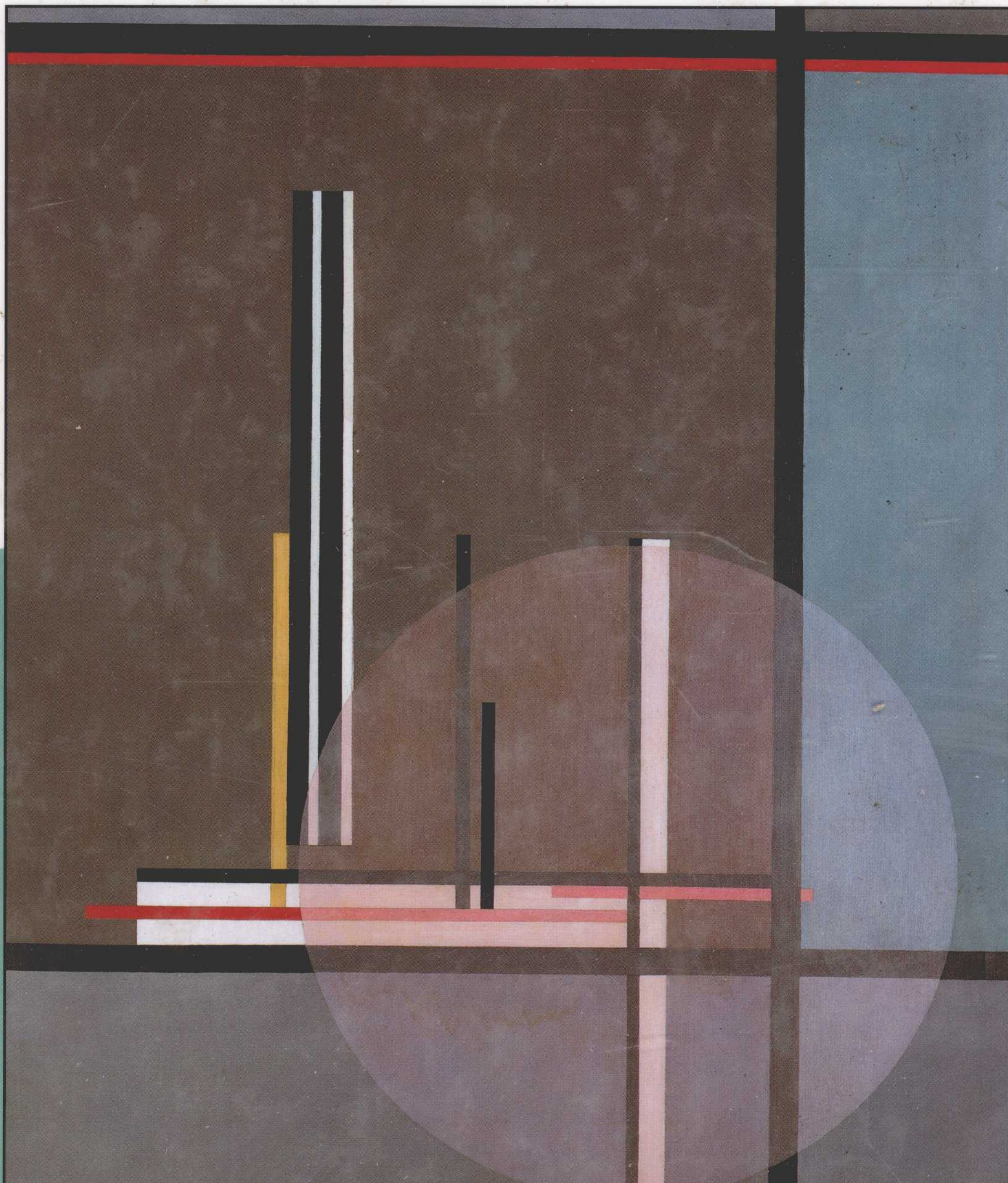
STIGLITZ

SECOND EDITION



ECONOMICS

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JOSEPH E. STIGLITZ

SECOND EDITION

STANFORD UNIVERSITY

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To Jane,
my harshest critic and best friend,
from whom I have learned the strengths and limits of economics;

and to
Julia, Jed, Michael, and Siobhan
in the hope, and belief, that a better understanding of economics
will lead to a better world for them to inherit.

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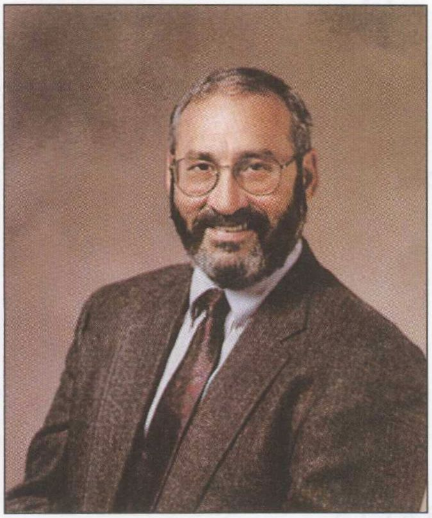

Internationally recognized as one of the leading economists of his generation, Joseph Stiglitz has made important contributions to virtually all of the major subdisciplines of economics: macroeconomics, monetary economics, public and corporate finance, trade, development, and industrial organization. After teaching at Yale, Princeton, and Oxford, in 1988 he accepted a position at Stanford University, where he has taught a wide variety of courses reflecting his broad interests, including Economics 1, one of the most popular courses on campus. In 1995, President Clinton asked him to serve as his chief economic adviser, appointing him Chairman of the Council of Economic Advisers and a member of the cabinet. In early 1997, Joseph Stiglitz will become the chief economist at the World Bank. Professor Stiglitz is the author and editor of hundreds of scholarly articles and books, including the best-selling undergraduate text *Economics of the Public Sector* (Norton) and, with Anthony Atkinson, *Lectures in Public Economics.* He is founding editor of the *Journal of Economic Perspectives,* established in 1987 to lower the barriers of specialization erected by other major economic journals, and a former vice president of the American Economic Association. Among his many prizes and awards, Professor Stiglitz has received the American Economic Association's John Bates Clark Award, given to the economist under forty who has made the most significant contributions to economics. Joe Stiglitz lives in Washington, D.C. with his wife and four children.

PREFACE

Introductory students should know the vitality of modern economics, and this book is intended to show it to them. When I set out to write the First Edition, I felt that none of the available texts provided an adequate understanding of the principles of *modern* economics—both the principles that are necessary to understanding how modern economists think about the world, and the principles that are required to understand current economic issues. Apparently, my feelings were shared by many, as indicated by the resounding success of the First Edition. Not only was the book widely adopted in colleges and universities throughout the world, it was also rapidly translated into many languages—from major editions in Spanish, German, Italian, Japanese, and Chinese, to small editions in countries such as Latvia. This Second Edition builds on the initiatives of its predecessor. With the benefit of a wealth of feedback from the market, I have made a painstaking effort to improve the book from cover to cover. I believe both students and their instructors will be pleased with the result.

This Second Edition is also informed by my recent professional activities. During the last two years I have enjoyed a direct role in U.S. policy making as Chairman of the President's Council of Economic Advisers and as a member of the cabinet. This experience reinforced my conviction that the traditional principles course is too far removed from our national policy concerns and the modern advances in economics that can illuminate them. Moreover, my service on the council afforded me the opportunity to discuss key economic problems with leaders throughout the world, both in the major industrialized countries, and in India, China, Russia, and elsewhere. It was thus with a unique perspective that I set to work on the revision during the last two years, carving out time on weekends and during countless hours before dawn.

Economics is the science of choice and writing a textbook involves many choices. As I began work on the Second Edition, I was convinced that the choices I had made in the First Edition—for instance, the attention to new topics such as technological change and finance, and the increased emphasis on international concerns—were moves in the right direction. However, I had become even more convinced that an understanding of these new topics had to be based on solid foundations in established fundamentals, such as the law of supply and demand, the theory of the firm, and traditional perspectives on unemployment, inflation, and economic growth. Thus, in the revision I simultaneously faced several challenges, not the least of which was to reinforce the exposition of the fundamentals at the same time as I strengthened the discussion of new topics.

As I began the revision, several of the dramatic changes that had loomed so large in the early 1990s seemed still to occupy center stage, but new issues and new perspectives had emerged. The Cold War has ended, with the political and economic system of Communism the clear loser. The economies of the former Soviet Union and Eastern Europe are making a slow and painful transition to market economies. The countries of East Asia have experienced unprecedented growth, in some cases at rates in excess of 10 percent, year after year; they have shown that development is indeed possible. Japan became an economic powerhouse, while Korea, Taiwan, and the other Asian "tigers" went from being poor, backward countries to major players in the international arena. Their growth was based on international trade; and trade throughout the world, including the United States, became increasingly important. Huge private capital flows helped finance the development of many countries as well as the huge deficits that the United States and other countries began to mount. When investors lost confidence in a country, as they did in Mexico in 1995, these same capital flows precipitated an economic crisis that quickly spread, and was only arrested through strong international cooperation.

The success of East Asia during the 1970s and 1980s stands out as an exception in a world economy facing disappointment; the countries of Africa saw their desperate economic conditions worsen. Beginning around 1973, growth in the industrialized countries, including the United States, slowed markedly. Europe, where unemployment rates in the 1960s had fallen to extremely low rates, saw them soar, often to double-digit levels, and stubbornly remain there; while in the United States, where growth had been benefiting all groups, but especially the poor, inequality increased, with those at the bottom actually seeing their living standards deteriorate.

Within the United States, the mid-1990s brought signs of a reversal of some of these trends. Unemployment and inflation rates fell to low levels that had not been seen for a quarter of a century. The poverty rate began to decline, and incomes of all groups, especially those at the bottom, began to rise. American manufacturing experienced rapid productivity growth, with matching success in the international arena—U.S. car production again became the largest in the world. But among many workers, anxiety remained high; while their real wages and incomes had begun to rise, they still had not recovered to their earlier peaks, and no one was sure these trends would continue. Overall productivity growth also remained below its previous levels. Though the soaring deficit was brought under control—it had been the largest experienced in the United States during peacetime, with the national debt quadrupling between 1981 and 1992—the long-run prospects appeared daunting; the aging of the baby boomers would put unprecedented strains on the Social Security and health care systems.

As the world has changed, expectations have changed as well. While there has been enormous improvement in the quality of air in cities like Pittsburgh and Gary, Indiana, and while Lake Erie has been rescued from becoming polluted to the point where life could not survive, our expectations about the environment have grown even faster; we have become increasingly aware of environmental costs. Longevity has increased, but our knowledge of how to prolong life has grown more rapidly, and rising medical costs have become a major political issue. The economic role of women has changed: not only have they taken a more active part in the labor force, there has been a revolution in expectations concerning the kinds of jobs women can hold.

And in virtually every one of the major issues facing the economy, there is a debate about the role of government. Government in the United States has grown enormously. Before World War II, government took less than one out of every five dollars; today it takes one out of three. Still, government in the United States is proportionately smaller than in most other industrialized countries. At one level, there is remarkable agreement about what the government should do: it has, for instance, a responsibility to help the economy remain at full employment with stable prices, to protect the environment, to support education, and to provide for the national defense. But how the government should fulfill its responsibilities in each of these areas is highly contentious. Issues concerning the responsibility, capability, and strategies of government in economics have come to the center of the political debate.

These are exciting issues and events, and they fill the front pages of our newspapers and the evening television news shows. Yet in the past, as a teacher of the introductory course in economics, I felt frustrated: none of the textbooks really conveyed this sense of excitement. Try as they might, none seemed to prepare students adequately for interpreting and understanding these important economic events.

As I thought about it more, one of the reasons for this became clear: the principles expounded in the classic textbook of Alfred Marshall of a hundred years ago, or that of Paul Samuelson, now almost fifty years old, were not the principles for today. The way we economists understand our discipline had changed to reflect the changing world, but the textbooks had not kept pace. Our professional discourse was built on a *modern* economics, but these new developments simply were not adequately reflected in any of the vast array of textbooks that were available to me as a teacher.

Indeed, changes in the economics discipline over the past half century have been as significant as the changes in world events. The basic competitive model of the economy was perfected in the 1950s. Since then, economists have gone beyond that model in several directions as they have come to better understand its limitations. Earlier researchers had paid lip service to the importance of incentives and to problems posed by limited information. However, it was only in the last two decades that real progress was made in understanding these issues. The 1996 Nobel Prize was awarded to two economists who pioneered our understanding of the role of information and incentives in the economy. Their work, and the work of others in this field, have found immediate applications. Both the collapse of the former Soviet bloc economies and the failure of the American S & L's can be viewed as consequences of the failure to provide appropriate incentives. A central question in the debate over growth and productivity has been, how can an economy provide stronger incentives for innovation? The debate over pollution and the environment centers around the relative merits of regulation and providing incentives not to pollute and to conserve resources.

The past fifty years have also seen a reexamination of the boundary between economics and business. Subjects like finance and management used to be relegated to business schools, where they were taught without reference to economic principles. Today we know that to understand how market economies actually work, we have to understand how firms finance and manage themselves. Tremendous insights can be gleaned through the application of basic economic principles, particularly those grounded in an understanding of incentives. Stories of corporate takeovers have been replaced on the front page by stories of bankruptcies as acquiring corporations have found themselves overextended. The 1990 Nobel Prize was awarded to three economists who had contributed most to the endeavor to integrate finance and economics. Yet the introductory textbooks had not yet built in the basic economics of finance and management.

We have also come to better appreciate the virtues of competition. We now understand, for instance, how the benefits of competition extend beyond price to competition for technological innovation. At the same time, we have come to see better why, in so many circumstances, competition appears limited. Again, as I looked over the available textbooks, none seemed to provide my students with a sense of this new understanding.

Samuelson's path-breaking textbook is credited with being the first to integrate successfully the (then) new insights of Keynesian economics with traditional microeconomics. Samuelson employed the concept of the neoclassical synthesis—the view that once the economy was restored to full employment, the old classical principles applied. In effect, there were two distinct regimes to the economy. In one, when the economy's resources were underemployed, macroeconomic principles applied; in the other, when the economy's resources were fully employed, microeconomic principles were relevant. That these were distinct and hardly related regimes was reflected in how texts were written and courses were taught; it made no difference whether micro was taught before macro, or vice versa. In the last few decades, economists came to question the split that had developed between microeconomics and macroeconomics. The profession as a whole came to believe that macroeconomic behavior had to be related to underlying microeconomic principles; there was one set of economic principles, not two. But this view simply was not reflected in any of the available texts.

This book differs from most other texts in several ways. Let me highlight some of the most prominent distinctions.

- Reflecting my recent involvement in policy making, throughout the text I have introduced examples to relate economic theory to recent policy discussions. In each chapter, there is a policy perspective box providing a vignette on one particular issue. These policy discussions both enliven the course and enrich the student's command over the basic material.
- Economists are a contentious lot, yet on most issues differences between economists pale in comparison to differences between noneconomists. Indeed, there is a high degree of consensus among economists, and I have drawn attention to this throughout the book with 20 points of consensus in economics.
- Rather than the traditional approach of stretching out the competitive model to fill the entire microeconomics course, I teach it in a compact format in the first two parts of the book. This allows students to develop a complete picture of the basic model, before looking systematically at the role of imperfect markets.
- Economic incentives and the problems of incomplete information are given prominence. To take two of many examples, Chapter 19 discusses the role that reputation plays in providing firms with incentives to maintain the quality of their products and Chapter 20 discusses how firms try to motivate their managers and how managers try to motivate their workers.
- Key issues which have been given short shrift in other texts are explained concisely and clearly, and related to economic fundamentals. For instance, I recognize finance as an important part of economics, and give serious attention to the role of innovation—both its microeconomic foundations and its macroeconomic consequences.
- The presentation of macroeconomics has been reorganized to reflect closely microeconomic foundations. Thus, I begin the discussion in Part Five with an aggregate, full-employment, competitive model with perfectly flexible wages and prices. From there I move on to discuss the other extreme—and the focus of traditional macroeconomics—an unemployment model with rigid wages and prices in Part Six. This leads, in Part Seven, to a discussion of the dynamics of adjustment, an economy in which wages and prices are neither perfectly flexible, nor perfectly rigid, and in which a principal concern is the rate of inflation. I rely on the aggregate supply and aggregate demand framework throughout the macroeconomic presentation. Moreover, a virtue of the new organization is that I can turn to the important topic of economic growth early in the course, in Chapter 26.
- International economics features prominently and is integrated thoroughly into the analysis. For instance, trade is taken up at the outset in Chapter 3. On the macroeconomic side, after I set forth the full-employment model in Chapter 25, I use it to explain international capital flows and the determinations of exchange rates in Chapter 26. Then, in presenting the models of unemployment (Part Six) and the dynamics of adjustment (Part Seven), international dimensions are carefully addressed, especially in relation to monetary theory and policy. There is also a discussion of international trade policy in Chapter 38.

I emphasize in this book that most economic tasks are beyond the scope of any one individual. This lesson certainly applies to the writing and revision of a textbook. In writing the First Edition, I benefited greatly from the reactions of my students in the introductory courses at Princeton and Stanford who class-tested early drafts. Their enthusiastic response to the manuscript provided much-needed boosts to motivate me at several critical stages. The reception of the First Edition showed that the venture was well worth the effort. Similarly, the revision has benefited from the experience of the thousands of students who have used the book and their teachers who offered invaluable feedback.

This edition, and the previous, have benefited from numerous reviewers. The book has been improved immeasurably by their advice—some of which, quite naturally, was conflicting. In particular, I would like to thank Robert T. Averitt, Smith College; Mohsen Bahmani-Oskooee, University of Wisconsin, Milwaukee; H. Scott Bierman, Carleton College; John Payne Bigelow, University of Missouri; Bruce R. Bolnick, Northeastern University; Adhip Chaudhuri, Georgetown University; Michael D. Curley, Kennesaw State College; John Devereux, University of Miami; K. K. Fung, Memphis State; Christopher Georges, Hamilton College; Ronald D. Gilbert, Texas Tech University; Robert E. Graf, Jr., United States Military Academy; Glenn W. Harrison, University of South Carolina; Marc Hayford, Loyola University; Yutaka Horiba, Tulane University; Charles Howe, University of Colorado; Sheng Cheng Hu, Purdue University; Glenn Hubbard, Columbia University; Allen C. Kelley, Duke University; Michael M. Knetter, Dartmouth College; Stefan Lutz, Purdue University; Mark J. Machina, University of California, San Diego; Burton G. Malkiel, Princeton University; Lawrence Martin, Michigan State University; Thomas Mayer, University of California, Davis; Craig J. McCann, University of South Carolina; Henry N. McCarl, University of Alabama, Birmingham; John McDermott, University of South Carolina; Marshall H. Medoff, University of California, Irvine; Peter Mieszkowski, Rice University; W. Douglas Morgan, University of California, Santa Barbara; John S. Murphy, Canisius College; William Nielson, Texas A&M University; Neil B. Niman, University of New Hampshire; David H. Papell, University of Houston; James E. Price, Syracuse University; Daniel M. G. Raff, Harvard Business School; Christina D. Romer, University of California, Berkeley; Richard Rosenberg, Pennsylvania State University; Christopher J. Ruhm, Boston University; Suzanne A. Scotchmer, University of California, Berkeley; Richard Selden, University of Virginia; Andrei Shleifer, Harvard University; John L. Solow, University of Iowa; George Spiva, University of Tennessee; Mark Sproul, University of California at Los Angeles; Frank P. Stafford, University of Michigan; Raghu Sundaram, University of Rochester; Hal R. Varian, University of Michigan; Franklin V. Walker, State University of New York at Albany; James M. Walker, Indiana University; Andrew Weiss, Boston University; Gilbert R. Yochum, Old Dominion University.

It is a pleasure also to acknowledge the help of a number of research assistants. Many of them went well beyond the assigned tasks of looking up, assembling, and graphing data to providing helpful criticism of the manuscript. These include Edwin Lai, now at Vanderbilt University; Chulsoo Kim, now at

Rutgers University; Alexander Dyck, now at Harvard University; Patricia Nabti and Andres Rodriguez, now at University of Chicago; Marcie Smith; and Kevin Woodruff. I am particularly indebted to John Williams, who supervised and coordinated the final stages of preparation of the manuscript for the First Edition, and who assisted me on the entire preparation of the second. But John did more than this: he has been a sounding board for new ideas, new organizational structures, and new expositions.

I have been indeed fortunate in both editions of enlisting the help of individuals who combined a deep understanding of economics with an editor's fine honed pen: Timothy Taylor in the first edition and Felicity Skidmore in the second. Both have remarkable editorial skills; both have long been committed to the notion that it is important that modern economic ideas be communicated widely and that they *can* be, in a way that is both enlightening and enjoyable. Timothy, John, and Felicity all gave their energy and creativity to the enterprise, and the book is immeasurably better as a result.

This is the second book I have published with Norton, a company that reflects many of the aspects of organizational design that I discuss in the text. This book would not be nearly the one it is without the care, attention, and most important, deep thought devoted to my work by so many there. A few deserve special mention. Donald Lamm, chairman of the board at Norton, managed not only to keep the incentives straight within his firm, but also found time to read early drafts of the First Edition at several critical stages and offered his usual insightful suggestions. I cannot sufficiently acknowledge my indebtedness to Drake McFeely, who served as my editor on the First Edition (and succeeded Don Lamm as president of Norton) and Ed Parsons, who served as my editor on the Second Edition. Both have been concerned about the ideas *and* their presentation, and both have been tough, but constructive, critics. The work of Kate Barry, the manuscript editor, was as energetic as it was cheerful. All four made my work harder, so that readers of this book would have an easier time. Several others at Norton also deserve mention: Rosanne Fox for her outstanding proofreading, Ashley Deeks and Claire Acher, for their work on the photographs, Antonina Krass for the splendid design of the book, and Roy Tedoff and Jane Carter for coordinating its production. Finally, Stephen King, Steve Hoge, and Linda Puckette have contributed their unique talents in the creation of innovative electronic ancillaries for the text.

I owe a special thanks to those who prepared the ancillary materials that accompany the text. Given the fact that this book represents a departure from the standard mold of the past, the tasks they faced were both more important and more difficult. Their enthusiasm, insight, and hard work have produced a set of truly superb ancillaries: Lawrence Martin of Michigan State University prepared the print Study Guide and oversaw its transformation into an electronic counterpart, Ward Hanson of Stanford has developed an on-line version of the Instructor's Manual, and Alan Harrison of McMaster University prepared the text bank for the Second Edition.

It is common practice at this point in the preface to thank one's spouse and children, who have had to sacrifice so much (presumably time that the author would otherwise have spent with them). My debt goes beyond these commonplaces. My wife and children have motivated me, partly by the thirst for economic understanding they have evidenced by their questions about the rapidly changing economic scene, and partly by their challenging spirit—easy explanations, making heavy use of standard economics jargon, would not satisfy them. Moreover, in their perspective, the only justification for diverting my attention away from them and from my principal job as a teacher and researcher was the production of a textbook that would succeed in communicating the basic ideas of modern economics more effectively than those already available. I hope that what I—together with all of those who have helped me so much—have produced will please them.

OUTLINE FOR A ONE-SEMESTER COURSE

This book may be used either in a one or two-semester course. Below I offer a provisional outline for a one-semester course covering both microeconomics and macroeconomics. The outline includes most of the fundamentals, but of necessity it must leave out some of the exciting new topics. Naturally, to a large extent, *which* topics get omitted is a matter of taste. The following is my selection for a short course using twenty chapters.

Chapter Number	Chapter Title
2	Thinking Like an Economist
3	Trade
4	Demand, Supply, and Price
5	Using Demand and Supply
7	The Public Sector
8	The Consumption Decision
9	Labor Supply and Savings
11	The Firm's Costs
12	Production
14	Monopolies and Imperfect Competition
18	Imperfect Information in the Product Market
24	Macroeconomic Goals and Measures
25	The Full-Employment Model
27	Overview of Unemployment Macroeconomics
28	Aggregate Demand
30	Money, Banking, and Credit
31	Monetary Theory
33	Inflation: Wage and Price Dynamics
36	Growth and Productivity
37	Deficits and Deficit Reduction

PART ONE

INTRODUCTION

These days economics is big news. If we pick up a newspaper or turn on the television for the prime-time news report, we are likely to be bombarded with statistics on unemployment rates, inflation rates, exports, and imports. How well are we doing in competition with other countries, such as Japan? Everyone seems to want to know. Political fortunes as well as the fortunes of countries, firms, and individuals depend on how well the economy does.

What is economics all about? That is the subject of Part One. Chapter 1 uses the story of the automobile industry to illustrate many of the fundamental issues with which economics is concerned. The chapter describes the four basic questions at the heart of economics, and how economists attempt to answer these questions.

Chapter 2 introduces the economists' basic model and explains why notions of property, profits, prices, and cost play such a central role in economists' thinking.

A fact of life in the modern world is that individuals and countries are interdependent. Even a wealthy country like the United States is dependent on foreign countries for vital imports. Chapter 3 discusses the gains that result from trade; why trade, for instance, allows greater specialization, and why greater specialization results in increased productivity. It also explains the patterns of trade—why each country imports and exports the particular goods it does.

Prices play a central role in enabling economies to function. Chapters 4 and 5 take up the question of what determines prices. Also, what causes prices to change over time? Why is water, without which we cannot live, normally so inexpensive, while diamonds, which we surely can do without, are very expensive? What happens to the prices of beer and cigarettes if the government imposes a tax on these goods? Sometimes the government passes laws requiring firms to pay wages of at least so much, or forbidding landlords to charge rents that exceed a certain level. What are the consequences of these government interventions?

Chapter 6 introduces two important realities: economic life takes place not in a single moment of time but over long periods, and life is fraught with risk. Decisions today have effects on the future, and there is usually much uncertainty about what those effects will be. How do economists deal with problems posed by time and risk?

Finally, Chapter 7 turns to the pervasive role of the government in modern economies. Its focus is on why the government undertakes the economic roles it does and on the economic rationale for government actions. It also describes the various forms that government actions might take and the changing roles of the government over time.

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